

Claim Amendments:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An IBAD apparatus for cooling and positioning a translating substrate during a continuous high-throughput coating deposition process comprising
a deposition chamber comprising a vacuum chamber, a gas inlet, a source of deposition material for coating the substrate, a means for delivering the deposition material from the deposition source to the surface of the substrate;
a substrate;
a means of translating a substrate to be coated through the deposition chamber; [[and]]
a means for positioning the substrate in a deposition zone where deposition material impinges upon the surface of the substrate, wherein the substrate positioning means contains internal liquid coolant channels and internal gaseous coolant delivery channels; and
an ion beam source for imparting a biaxial texture in the deposition material.
2. (Original) The apparatus of claim 1 where the internal gaseous coolant delivery channels are connected by a manifold to the gas inlet and where the channels open to the deposition chamber through orifices at multiple points where the substrate assembly contacts the translating substrate.
3. (Original) The apparatus of claim 1 where the means for delivering the deposition material is an electron beam energy source.
4. (Original) The apparatus of claim 1 where the means for delivering the deposition material is an ion beam energy source.
5. (Original) The apparatus of claim 1 where the means for delivering the deposition material is a magnetron energy source.

6. (Canceled)

7. (Original) The apparatus of claim 2 where the diameter of the gas orifices are in the range of from about 0.025 to about 0.4 inches.

8. (Original) The apparatus of claim 2 where the diameter of the gas orifices are in the range of from about 0.05 to about 0.25 inches.

9. (Original) The apparatus of claim 2 where the diameter of the gas orifices are in the range of from about 0.075 to about 0.175 inches.

10. (Original) The apparatus of claim 2 where the multiple orifices are located no more than three inches apart.

11. (Original) The apparatus of claim 2 where there the multiple orifices are positioned such that there are from one to about twelve orifices every three inches.

Claims 12-24 (Canceled)

25. (New) An IBAD apparatus, comprising
a deposition chamber comprising a vacuum chamber, a gas inlet, a source of deposition material for coating the substrate, and an energy source for delivering deposition material to a tape;
a transport system for translating the tape through the deposition chamber;
a substrate assembly for positioning the tape in a deposition zone where deposition material impinges upon the tape, the substrate assembly having a internal liquid coolant channels and internal gaseous coolant delivery channels; and
an ion beam source for imparting a biaxial texture in the deposition material.

26. (New) The IBAD apparatus of claim 25, wherein the internal gaseous coolant delivery channels deliver a flow of gas to a backside of the tape translating across the substrate assembly.

27. (New) The IBAD apparatus of claim 26, wherein the internal gaseous coolant delivery channels terminate at a surface of the substrate assembly in the form of nozzles.

28. (New) The IBAD apparatus of claim 27, wherein the nozzles are spaced apart along a length of the substrate block.

29. (New) The IBAD apparatus of claim 25, wherein the source of deposition material contains deposition material selected from the group consisting of YSZ, MgO and CeO₂.

30. (New) The IBAD apparatus of claim 29, wherein deposition material comprises MgO.

31. (New) The IBAD apparatus of claim 25, wherein internal gaseous coolant delivery channels contain and deliver gaseous coolant selected from the group consisting of N₂, Ar, He, and O₂.